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MBA
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MBA (Sem. - 1st)

QUANTITATIVE TECHNIQUES

SUBJECT CODE : MB-104(2k8 & onwards)

Paper ID : [C0167]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.

Section - A

Q1)

(10 × 2 = 20)

- a) Define rank of a matrix. For what value of x , rank of $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 3 & 2 \\ 7 & 0 & x \end{bmatrix}$ is 2.
- b) The present value of a perpetuity of Rs.200 per quarter is Rs. 8000. What is the annual rate of interest?
- c) Distinguish between dispersion and skewness.
- d) What is Covariance? State its role in correlation and regression.
- e) Rank differences for 5 pairs of ranks are:
5, -3, -1, 1, K. Find spearman's rank correlation coefficient.
- f) Convert the Annual Trend equation $Y = 96 + 7.2X$ into average monthly Trend equation.
- g) What is an Index Number? What precautions are to be taken while choosing base year?
- h) Let A and B be two possible outcomes of an experiment and $p(A) = 0.4$; $p(A \cup B) = 0.7$ and $p(B) = p$. For what value of P, are A,B independent events?
- i) Distinguish between level of significance and degrees of freedom.
- j) Differentiate between parameter and statistic.

Section - B

(4 × 10 = 40)

Q2) (a) Discuss the importance of Mathematics and statistics in Business Decision making.

(b) Solve the following system of simultaneous equations by matrix inversion.
 $2x + 3y - z = 15$; $4y + 2z = 16$; $3x + 2y = 18$

Q3) The distribution monthly wages of workers is:

Wages:	0-100	0-200	0-300	0-400	0-500	0-600
No. of Workers:	12	30	57	77	94	100

What limits include middle 50% of workers. Also comment on degree and direction of skewness.

Q4) (a) Distinguish between correlation and Regression.

(b) Given the two regression equations.

$x = Y/2$ and $Y = 6x - 4$ and mean of squared X is 3. Find coefficient of correlation, standard deviation of Y. What percent variation in Y is not explained by X.

Q5) Write short notes on any two.

(a) Components of a Time Series.

(b) Uses and limitations of Index Numbers.

(c) Properties of Normal Distribution.

Q6) (a) In a city three news papers X, Y and Z are published. 40% people read X; 50% read Y; 30% read Z; 20% read both X and Y; 15% read X and Z; 10% read Y and Z; and 24% read all the three. What is the probability that a person selected at random reads:

(i) atleast one newspaper;

(ii) does not read any of the newspaper.

(b) Marks in an examination are normally distributed with mean 75 and standard deviation 5. If top 5% get grade A and bottom 25% get grade F, what marks is the lowest A and what marks is the highest F?

Q7) (a) What do you mean by sampling distribution? Suppose a population consists of values 1, 2, 3, 4, 5. Take all possible samples of size 2 (without replacement) and construct sampling distribution of mean. Show that mean of sampling distribution of mean is equal to the population mean.

(b) 500 units of Factory A are inspected and 12 are found to be defective, 800 units of factory B are inspected and 12 are found to be defective. Can it be concluded at 5% level of significance that production of factory B is better than in Factory A?

